UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,687	02/19/2004	Kamal Jain	MS1-3951US	4582

22801 7590 06/23/2009
LEE & HAYES, PLLC
601 W. RIVERSIDE AVENUE
SUITE 1400
SPOKANE, WA 99201

EXAMINER	
ERB, NATHAN	

ART UNIT	PAPER NUMBER
3628	

MAIL DATE	DELIVERY MODE
06/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.**	**Applicant(s)**	
	10/782,687	JAIN ET AL.	
	Examiner	**Art Unit**	
	NATHAN ERB	3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6,11,12,14-16,20,23,25 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6,11,12,14-16,20,23,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 4, 2009, has been entered.

Response to Arguments

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Applicant's response to Office action was received on February 4, 2009.

4. In accordance with Applicant's granted petition to revive, this application has been revived.

5. In response to Applicant's cancellation of claim 13, all previous rejections of claim 13 under 35 U.S.C. 101 are hereby withdrawn.

6. The amendments to claim 12 do not tie Applicant's invention to a statutory class because the amendments in question (adding "computer-implemented" to the preamble and "via a computer processor" to the receiving step) are merely nominal recitations of physical structure. Please see the proposed examiner's amendment below for suggestions for overcoming this respective rejection under 35 U.S.C. 101.

7. Please note the new rejections under 35 U.S.C. 112, first paragraph, below in this Office action.

8. In response to Applicant's amendment of the claims, the corresponding claim rejections have been correspondingly amended below in this Office action.

9. Examiner does not find Applicant's arguments regarding the preemption rejection to be sufficiently persuasive to overcome the rejection. Please see the proposed examiner's amendment below in this Office action for suggestions on how to overcome the preemption rejections.

10. Please see the proposed examiner's amendment below in this Office action for suggestions on how to overcome the claim rejections, as well as various informalities.

PROPOSED EXAMINER'S AMENDMENT

1. (currently amended) A computer-readable medium having computer-readable instructions embedded therein which, when executed by a computer, cause the computer to implement a method for facilitating determination of equilibrium values for a market system, the method for facilitating determination of equilibrium values for the market system comprising:

receiving a number of types of goods m, a number of buyers (n + 1), an initial amount of each good that each buyer possesses, and a utility function for each of buyers i = 1,...,n, for the market system;

~~receiving supply and demand data for a market system;~~

~~demarcating at least a subset of the data into buyer data and seller data~~

applying a polynomial-time approximation method to the ~~demarcated~~received data to generate an approximate equilibrium price vector for the market system, the polynomial-time approximation method ~~comprises~~comprising:

initializing with an arbitrary first price vector p;

setting a variable, D, to represent a maximum deficiency [[of]]for the first price vector p;

constructing an instance, M_p, of ~~a dichotomous~~the market system, wherein constructing the instance, M_p, of the market system comprises:

providing m types of goods and $(n + 1)$ buyers;

setting, for $i = 1,\ldots,n$, a utility of buyer i for the goods as to be calculated from the corresponding utility function;

establishing the budget of buyers $i = 1,\ldots,n$, $e_i := \sum_{j=1}^{m} p_j w_j^i$, according to:

$$e_i := \sum_{j=1}^{m} p_j w_j^i .$$

wherein e_i is the budget of buyer i, p_j is the price of good j in the first price vector, and w_j^i is equal to an initial amount of good j that buyer i possesses;

setting, for $i = (n + 1)$, a utility of buyer i for each of goods $j = 1,\ldots,m$, as equal to p_j; and

establishing the budget of buyer $i = (n + 1)$ as $e_{(n+1)} := D$;

executing a DPSV algorithm on the instance, M_p, starting from the first price vector p and increasing prices until equilibrium is reached, and outputting a second price vector (p') via execution of the DPSV algorithm;

setting a budget e_i'[[for *i*]] for ~~every agent~~each buyer *i* with respect to the second price vector (p') according to:

$$e_i' := \sum_{j=1}^{m} p_j' w_j^i;$$

determining if a budget ratio (e_i'/e_i) for ~~every agent~~each buyer *i* satisfies a budget ratio constraint of:

$$e_i'/e_i \leq 1+\varepsilon,$$

wherein ε represents a desired amount of approximation;

~~outputting~~identifying the second price vector (p') when the budget ratio constraint is satisfied for every buyer *i*[[,]] as the approximate equilibrium price vector for the market system; and

iterating the polynomial-time approximation method with the first price vector p set equal to the second price vector (p'), instead of an arbitrary price vector, when the budget ratio constraint is unsatisfied, until the budget ratio constraint is satisfied;

~~sending results from the polynomial-time approximation method to an iterative analysis controller component to determine if the results meet a predetermined threshold error value to halt an equilibrium modeling component; and~~

outputting the approximate equilibrium price vector ~~data~~ to a computer monitor display; and

setting prices based on the approximate equilibrium price vector.

3. (currently amended) The computer-readable medium of claim 1, wherein the approximate equilibrium price vector[[,]] ~~comprising~~comprises an approximate equilibrium price vector, p^*, that produces, in conjunction with a bundle of goods[[, x^i,]] for each ~~agent~~buyer *i*, an ε-approximate equilibrium for the market system such that:

for every good *j*:

$$(1-\varepsilon)\sum_{i=1}^{n} w_j^i \le \sum_{i=1}^{n} x_j^i \le \sum_{i=1}^{n} w_j^i;$$

wherein x_j^i is the number of good *j* in the bundle of goods of buyer *i*; and

for all *i*, a utility, $\sum_{j=1}^{m} u_{ij} x_j^i$, of ~~agent~~buyer *i* is ~~at least~~equal to or greater than (1-ε) times a value of an optimum solution of a maximization of the utility function[[, $u_i(x)$,]] for the buyer *i* subject to:

$$[[\sum_{j=1}^{m} p_j^* x_j \le \sum_{j=1}^{m} p_j^* w_j^i;]] \qquad \text{~~(Eq. 1)~~}$$

$$\sum_{j=1}^{m} p_j^* x_j^i \le \sum_{j=1}^{m} p_j^* w_j^i;$$

wherein *m* represents ~~types of divisible goods being traded in the market system~~the number of types of goods and w_j^i indicates [[an]]the initial amount of good *j* that ~~agent~~buyer *i* possesses.

4. (currently amended) The computer-readable medium of claim 1, wherein the polynomial-time approximation method ~~comprising~~comprises an iterative method that utilizes, at least in part, revenue generated in a previous iteration for a specific ~~agent~~buyer as a budget for the specific ~~agent~~buyer in a current iteration.

5. (currently amended) The computer-readable medium of claim 4, wherein the iterative method further ~~utilizing~~utilizes a dummy buyer to account for residual goods.

6. (currently amended) The computer-readable medium of claim 1, wherein the polynomial-time approximation method ~~comprising~~comprises, at least in part, a linear utility function ~~relating to~~for at least one ~~agent~~buyer.

11. (currently amended) The computer-readable medium of claim 1, wherein the polynomial-time approximation method ~~yielding~~yields an exact equilibrium price for the market system.

12. (currently amended) A computer-implemented method for facilitating determination of equilibrium values for a market system, comprising:

receiving, by a computing system, a number of types of goods *m*, a number of buyers (n + 1), an initial amount of each good that each buyer possesses, and a utility function for each of buyers $i = 1,...,n$, for the market system;

~~receiving supply and demand data for a market system via a computer processor;~~

~~demarcating at least a subset of the data into buyer data and seller data;~~

applying, by the computing system, a polynomial-time approximation method to the ~~demarcated~~received data to generate an approximate equilibrium price vector for the market system, the polynomial-time approximation method ~~comprises~~comprising:

initializing with an arbitrary first price vector p;

setting a variable, D, to represent a maximum deficiency [[of]]for the first price vector p;

constructing an instance, M_p, of [[a]]<u>the</u> ~~dichotomous~~ market<u> system</u>, <u>wherein constructing the instance, M_p, of the market system comprises:</u>

<u>providing *m* types of goods and (*n* + 1) buyers;</u>

<u>setting, for *i* = 1,...,*n*, a utility of buyer *i* for the goods as to be calculated from the corresponding utility function;</u>

<u>establishing the budget of buyers *i* = 1,...,*n*, according to:</u>

$$e_i := \sum_{j=1}^{m} p_j w_j^i, \; e_i := \sum_{j=1}^{m} p_j w_j^i, \qquad \underline{e_i := \sum_{j=1}^{m} p_j w_j^i}\,;$$

<u>wherein e_i is the budget of buyer *i*, p_j is the price of good *j* in the first price vector, and w_j^i is equal to an initial amount of good *j* that buyer *i* possesses;</u>

<u>setting, for *i* = (*n* + 1), a utility of buyer *i* for each of goods *j* = 1,...,*m*, as equal to p_j; and</u>

<u>establishing the budget of buyer *i* = (*n* + 1) as $e_{(n+1)} := D$;</u>

executing a DPSV algorithm on the instance, M_p, starting from the <u>first</u> price vector *p* and increasing prices until equilibrium is reached, and outputting a second price vector (*p'*);

setting a budget <u>e_i'</u>[[for *i*]] for ~~every agent~~<u>each buyer</u> *i* with respect to the second price vector <u>(*p'*)</u> according to:

$$e_i' := \sum_{j=1}^{m} p_j' w_j^i;$$

determining if a budget ratio <u>(e_i'/e_i)</u> for ~~every agent~~<u>each buyer</u> *i* satisfies a budget ratio constraint of:

$$e_i'/e_i \le 1+\varepsilon,$$

wherein ε represents a desired amount of approximation;

~~outputting~~identifying the second price vector *(p')* when the budget ratio constraint is satisfied for every buyer *i*[[,]] as the approximate equilibrium price vector for the market system; and

iterating the polynomial-time approximation method with the first price vector *p* set equal to the second price vector *(p')*, instead of an arbitrary price vector, when the budget ratio constraint is unsatisfied, until the budget ratio constraint is satisfied;

~~sending results from the polynomial-time approximation method to an iterative analysis controller component to determine if the results meet a predetermined threshold error value to halt an equilibrium modeling component; and~~

outputting the approximate equilibrium price vector ~~data~~ to a computer monitor display; and

setting prices based on the approximate equilibrium price vector.

14. (currently amended) The computer-implemented method for facilitating determination of equilibrium values for the market system of claim 12, wherein the approximate equilibrium price vector[[,]] ~~comprising~~comprises an approximate equilibrium price vector, p^*, that produces, in conjunction with a bundle of goods[[, x^i,]] for each ~~agent~~buyer *i*, an ε-approximate equilibrium for the market system such that:

for every good *j*:

$$(1-\varepsilon)\sum_{i=1}^{n} w_j^i \le \sum_{i=1}^{n} x_j^i \le \sum_{i=1}^{n} w_j^i;$$

wherein x_j^i is the number of good *j* in the bundle of goods of buyer *i*; and

for all *i*, a utility, $\sum_{j=1}^{m} u_{ij} x_j^i$, of ~~agent~~buyer *i* is ~~at least~~equal to or greater than (1-ε) times a value of an optimum solution of a maximization of the utility function[[, $u_i(x)$,]] for the buyer *i* subject to:

$$[[\sum_{j=1}^{m} p_j^* x_j \leq \sum_{j=1}^{m} p_j^* w_j^i;]] \qquad \cancel{(Eq. 1)}$$

$$\sum_{j=1}^{m} p_j^* x_j^i \leq \sum_{j=1}^{m} p_j^* w_j^i ;$$

wherein *m* represents ~~types of divisible goods being traded in the market system~~the number of types of goods and w_j^i indicates [[an]]the initial amount of good *j* that ~~agent~~buyer *i* possesses.

15. (currently amended) The computer-implemented method for facilitating determination of equilibrium values for the market system of claim 12, wherein the polynomial-time approximation method ~~comprising~~comprises an iterative method that utilizes, at least in part, revenue generated in a previous iteration for a specific ~~agent~~buyer as a budget for the specific ~~agent~~buyer in a current iteration.

16. (currently amended) The computer-implemented method for facilitating determination of equilibrium values for the market system of claim 15, wherein the iterative method further ~~utilizing~~utilizes a dummy buyer to account for residual goods.

20. (currently amended) The computer-implemented method for facilitating determination of equilibrium values for the market system of claim 12, wherein the polynomial-time approximation method ~~yielding~~yields an exact equilibrium price for the market system.

23. (currently amended) A computer system that facilitates determination of equilibrium values for a market system, comprising:

a processor; and

a memory connected to the processor;

wherein the processor and the memory perform the steps of:

receiving a number of types of goods *m*, a number of buyers (n + 1), an initial amount of each good that each buyer possesses, and a utility function for each of buyers i = 1,...,n, for the market system;

~~means for receiving supply and demand data for a market system, and demarcating at least a subset of the data into buyer data and seller data;~~

~~means for~~ applying a polynomial-time approximation method to the ~~demarcated~~received data to generate an approximate[[d]] equilibrium price vector for the market system, the polynomial-time approximation method ~~comprises~~comprising:

initializing with an arbitrary first price vector p;

setting a variable, D, to represent a maximum deficiency [[of]]for the first price vector p;

constructing an instance, M_p, of [[a]]the ~~dichotomous~~ market system, wherein constructing the instance, M_p, of the market system comprises:

providing *m* types of goods and (n + 1) buyers;

setting, for i = 1,...,n, a utility of buyer i for the goods as to be calculated from the corresponding utility function;

establishing the budget of buyers i = 1,...,n, according to:

$$e_i := \sum_{j=1}^{m} p_j w_j^i,\ e_i := \sum_{j=1}^{m} p_j w_j^i, \qquad e_i := \sum_{j=1}^{m} p_j w_j^i.$$

wherein e_i is the budget of buyer i, p_j is the price of good j in the first price vector, and w_j^i is equal to an initial amount of good j that buyer i possesses;

setting, for i = (n + 1), a utility of buyer i for each of goods j = 1,...,m, as equal to p_j; and

establishing the budget of buyer i = (n + 1) as $e_{(n+1)} := D$;

executing a DPSV algorithm on the instance, M_p, starting from the first price vector p and increasing prices until equilibrium is reached, and outputting a second price vector (p');

setting a budget e_i'[[for i]] for ~~every agent~~each buyer i with respect to the second price vector (p') according to:

$$e_i' := \sum_{j=1}^{m} p_j' w_j^i;$$

determining if a budget ratio (e_i'/e_i) for ~~every agent~~each buyer i satisfies a budget ratio constraint of:

$$e_i'/e_i \le 1 + \varepsilon,$$

wherein ε represents a desired amount of approximation;

~~outputting~~identifying the second price vector (p') when the budget ratio constraint is satisfied for every buyer i[[,]] as the approximate equilibrium price vector for the market system; and

iterating the polynomial-time approximation method with the first price vector p set equal to the second price vector (p'), instead of an arbitrary price vector, when the budget ratio constraint is unsatisfied, until the budget ratio constraint is satisfied;

~~means for sending results from the polynomial-time approximation method to an iterative analysis controller component to determine if the results meet a predetermined threshold error value to halt an equilibrium modeling component; and~~

~~means for~~ outputting the approximate equilibrium price vector ~~data~~ to a computer monitor display; and

setting prices based on the approximate equilibrium price vector.

25. (currently amended) The computer system of claim 23, wherein the polynomial-time approximation method ~~comprising~~comprises an iterative method that utilizes, at least in part, revenue generated in a previous iteration for a specific ~~agent~~buyer as a budget for the specific ~~agent~~buyer in a current iteration.

26. (currently amended) The computer system of claim 23, wherein the polynomial-time approximation method ~~employing, at least in part, a dichotomous market solution algorithm to provide at least one price selected from the group consisting of an~~

~~approximate market equilibrium price and~~yields an exact equilibrium ~~market~~ price for the market system.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 1, 3-6, 11-12, 14-16, 20, 23, and 25-26 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Applicant's most recent response deleted various claim limitations from the independent claims which specified how the algorithm is initiated in these claims. These limitations are critical or essential to the practice of the invention; therefore, when the claims lack these limitations, the claims are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). From Applicant's specification, there does not appear to be support for any other way of initiating the algorithm.

Claim Rejections - 35 USC § 101

13. Claims 12, 14-16, and 20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 12-16 and 20 are directed to a series of steps. In order for a series of steps to be considered a proper process under § 101, a claimed process must either: (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials). *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972). Thus, to qualify as

patent eligible, these processes should positively recite the other statutory class to which it is tied (e.g., by identifying the apparatus that accomplishes the method steps), or positively recite the subject matter that is being transformed (e.g., by identifying the product or material that is changed to a different state). Claims 12-16 and 20 identify neither the apparatus performing the recited steps nor any transformation of underlying materials, and accordingly are directed to non-statutory subject matter.

14. Claims 1, 3-6, 11-12, 14-16, 20, 23, and 25-26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. MPEP 2106(IV)(C)(3) states:

> "Even when a claim applies a mathematical formula, for example, as part of a seemingly patentable process, USPTO personnel must ensure that it does not in reality "seek[] patent protection for that formula in the abstract." *Diehr*, 450 U.S. at 191, 209 USPQ at 10. "Phenomena of nature, though just discovered, mental processes, abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67, 175 USPQ at 675. One may not patent a process that comprises every "substantial practical application" of an abstract idea, because such a patent "in practical effect would be a patent on the [abstract idea] itself." *Benson*, 409 U.S. at 71-72, 175 USPQ at 676; cf. *Diehr*, 450 U.S. at 187, 209 USPQ at 8 (stressing that the patent applicants in that case did "not seek to pre-empt the use of [an] equation," but instead sought only to "foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process"). "To hold

otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection." *Diehr*, 450 U.S. at 192, 209 USPQ at 10. Thus, a claim that recites a computer that solely calculates a mathematical formula (see *Benson*) or a computer disk that solely stores a mathematical formula is not directed to the type of subject matter eligible for patent protection. If USPTO personnel determine that the claimed invention preempts a 35 U.S.C. 101 judicial exception, they must identify the abstraction, law of nature, or natural phenomenon and explain why the claim covers every substantial practical application thereof."

In this application, the abstract idea is the mathematical algorithm for determining market equilibria. These claims cover every substantial practical application of the algorithm because there is no clearly apparent practical application for the claimed algorithm besides calculating market equilibria. Therefore, these claims preempt a 35 U.S.C. 101 judicial exception and are directed to non-statutory subject matter.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN ERB whose telephone number is (571) 272-7606. The examiner can normally be reached on M-F 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on (571) 272-6708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Erb
Examiner
Art Unit 3628

nhe

/JOHN W HAYES/
Supervisory Patent Examiner, Art Unit 3628